

## PATENT ABSTRACTS OF JAPAN

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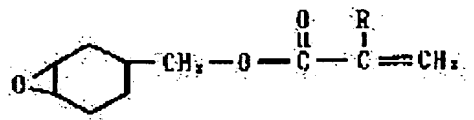
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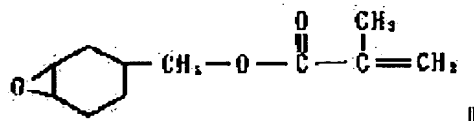
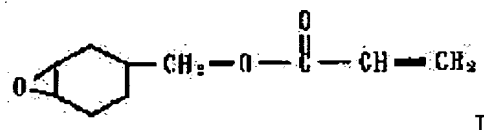
## (54) PHOTOCURABLE OLIGOMER, RESIN COMPOSITION CONTAINING SAME, AND ITS CURED ARTICLE

## (57)Abstract:

PURPOSE: To obtain a photocurable oligomer which gives a printing ink excellent in gloss, pigment dispersion, printability, etc., by reacting a specific compd. with rosin.



CONSTITUTION: A photocurable oligomer is prepd. by reacting a compd. of formula I (wherein R is H or CH3) (e.g. a compd. of formula II or III) with rosin. The type of rosin used is determined considering the rate of ultraviolet curing of the resulting ink, the hue of the oligomer, etc., and usually rosins with conjugated double bonds stabilized, such as a hydrogenated rosin or a disproportionated rosin, are suitable. The oligomer can be used for various applications by utilizing its photocurability and gives, when used as a binder, a printing ink excellent in gloss, pigment dispersion, printability, etc., in comparison with conventional solvent-based printing inks.



## LEGAL STATUS

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1. This document has been translated by computer. So the translation may not reflect the original precisely.

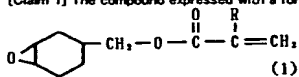
2. \*\*\* shows the word which can not be translated.

3. In the drawings, any words are not translated.

## CLAIMS

[Claim(s)]

[Claim 1] The compound expressed with a formula (1) [\*\* 1]



(— R is H or CH<sub>3</sub> among a formula.) — photoresist oligomer which is a reactant with rosin.

[Claim 2] The resin constituent characterized by containing photoresist oligomer according to claim 1.

[Claim 3] The hardened material of a resin constituent according to claim 2.

[Translation done.]



No.	PPM
93	24. 816
94	24. 715
95	24. 634
96	24. 636
97	23. 963
98	22. 775
99	21. 819
100	21. 725
101	21. 625
102	21. 373
103	21. 303
104	19. 830
105	19. 597
106	19. 317
107	19. 047
108	18. 632
109	18. 342
110	18. 253
111	18. 199
112	18. 101
113	17. 832
114	16. 845
115	16. 617
116	14. 645
117	14. 527
118	0. 337
119	0. 002

36.558 91 26.092 65 36.349 92 25.401

[0021] It kneaded and adjusted using 3 roll mills in the presentation ratio (a numeric value shows the weight section.) as shown in application examples 1-5 and example of comparison 1 table 1, and the resin constituent for printing ink was obtained. And the ink performance evaluation of this constituent was performed.

[0022] The ink performance-evaluation approach hardenability (setting time): Stick \*\*\*\*\* art paper by pressure with RI circuit tester, and find the irradiation time (second) which that ink stops adhering took as the setting time, after carrying out drawdown of the ink 0.8g to carton paper using RI circuit tester (Akira Seisakusho Make) and irradiating ultraviolet rays from the distance of 10cm with 80 W/cm and a high-pressure mercury lamp promptly.

Gloss of original ink and emulsification ink: Carry out macro-scope observation and evaluate the gloss (original ink gloss) of the print after hardening obtained above.

[0023] Moreover, after draining off water make ink 0.8g and dampening water emulsify with RI circuit tester, drawdown is carried out to carton paper, it hardens on the same conditions as the time of measurement of original ink gloss, the gloss of the printing side after hardening is made into the gloss of emulsification ink, it observes similarly with the naked eye, and the following criteria estimate.

O : It is very fitness (a printing side is smooth and it is dramatically glossy.).

O : Fitness (gloss is in a printing side)

\*\* : Medium [ of O and x ] x : Defect (there is no gloss in a printing side and reliance does not reflect light in it, either)

[0024]

Misting : 1200 revolutions of rolls to which paper was put and ink adhered before the roll of an

inkometer are carried out, the misting of the ink is carried out, the condition of the ink which dispersed in space is observed with the naked eye, and the following criteria estimate.

O : Few (an activity — suitable)

x : Many (an activity — unsuitable)

Detergency : The detergency by the kerosene of the roll of the inkometer to which ink adhered is evaluated.

Bronzing: After carrying out drawdown to carton paper using RI circuit tester and leaving it at a room temperature for 1 hour, on the same conditions as a hardenability trial, ultraviolet rays are irradiated for 0.5 seconds, stiffen them, observe with the naked eye, and the following criteria estimate.

O : It compares with the sample which carried out drawdown direct posture, and is equivalent color tone x. : Separation of a pigment and a vehicle is seen and the reflected light presents gold.

[0025]

table 1 [ ] An example The example of a comparison 1 2 3 4 5 1 Two products A 40 30 50 35 45 Product B 5 5 5 KAYARAD R-114 \* 1 4036 \*\* FM-300 \*2 29 29 29 T-1420 \*3 34 33 TMPTA \* 4 19 19 IRUGA cure -907\*5 6 58 6 6 6 KAYACURE DETX \* 6 1 11 1 111 carmine 6B \* 7 2424 2424 24 24 The 24 setting times (second) 0.4 0.3 0.4 0.50.4 0.3 0.3 Hara ink gloss O O O O O O emulsification ink gloss O O O O O \*\* misting O O O O x x detergency Good Good Good fitness Good Defect Defect BURON zinc O O O O O x [0026] Note \*1 KAYARAD R-114 : Epicoet 828 made from oil-ized Shell Epoxy Acrylic ester ghost.

\*2 KAYARAD FM-300: — the tetra-ethoxy diacrylate of bisphenol A, and the Nippon Kayaku Co., Ltd. make — \*3 KAYARAD T-1420:dimethylolpropanetetraacrylate Nippon Kayaku Co., Ltd. make — \*4 KAYARAD TMPTA : trimethylolpropane triacrylate and the Nippon Kayaku Co., Ltd. make — \*5 IRUGA cure -907 : The Giba-Geigy make and photopolymerization initiator. \*6 KAYACURE DETX : The Nippon Kayaku Co., Ltd. make, photopolymerization initiator. \*7 Carmine 6B : the charge of an azo system rosy face.

[0027] The resin constituent of this invention is excellent in gloss and printabilities (a misting, detergency, bronzing, etc.) so that clearly from a table.

[0028]

[Effect of the Invention] The photoresist oligomer of this invention has the advantage which was excellent in points, such as gloss of the obtained printing ink, pigment dispersibility, and a printability, as compared with conventional solvent mold printing ink, when it is applicable to a wide range application and is especially used as a binder for printing ink by using the photoresist.

[Translation done.]